<center>Remarks</center>

I.   Claim Objections

      The Office Action objects to claims 1, 13, 24, 32, 33 and 53 due to the recitation, "said packet the according."

      Applicants have amended those claims to correct the grammatical error.

II.   Claim Rejections

    A.   35 USC § 112

      Claims 1-29, 31-32, 38, 41, 46, 53, 54, 57 stand rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

    1.   Claims 1, 13, 24 and 53

      Regarding claims 1, 13, 24 and 53, the Office Action states:

> Claims 1 recites the limitation, "associating an operation code with said first packet, wherein said operation code indicates a status of said first packet, including whether said packet is to be transferred to the host computer system for processing in accordance with said pres-selected protocol". Claim 1 then recites the limitation "processing, by the network interface, said packet the according to the TCP connection." It is unclear what the purpose is of determining whether said packet is a candidate for transfer to the host that avoids processing in accordance with said preselected protocol, when the next limitation <u>always</u> processes the packet. It appears to defeat the entire purpose of determining whether to avoid processing or not, when the following limitation <u>always</u> processes the packet. Claims 13, 24, 53 are rejected for the same reasoning.

      Applicants have amended claim 1 to recite, in part, "wherein said operation code indicates a status of said first packet, including whether said packet is a candidate for transfer to the host computer system that avoids processing said header portion by the host computer system in accordance with said TCP protocol." Applicants respectfully submit that this recitation is not inconsistent with the later recitation in claim 1 of "processing, by the network interface, said packet according to the TCP connection."

Similarly, claim 13 has been amended to recite, in part, "associating an operation code with said packet, wherein said operation code identifies a status of said packet, including whether said packet is to be TCP processed by the host computer; ... if said operation code indicates that said packet is not to be TCP processed by the host computer... processing, by the network interface, said packet according to the TCP connection."

Likewise, claims 24 and 53 have been amended to recite, in part, "associating a summary with said first packet, wherein said summary indicates a status of said first packet, including whether said packet is a candidate for transfer to the host computer system that avoids processing said header portion by the host computer system in accordance with said TCP protocol; and processing, by the network interface, said packet according to the TCP connection."

2. Claims 32, 38 and 54

Regarding claims 32, 38 and 54, the Office Action states:

> Claim 32 recites the limitation, "processing, by the network interface, said packet the according to the TCP connection". The claim then follows with the limitation, "if the host computer system contains a plurality of processors such that a first of the processors is on the network interface and a second of the processors is on the host computer, identifying a processor of the first and second processors to process said packet". These limitations are unclear as it appears that the first mentioned limitation always requires the network interface to process the packet, and then in the second mentioned limitation, a determination is made as to whether the processor on the network interface does the processing or the processor on the host does the processing. It is unclear as to why this determination is being made, as it appears the processing has already been performed by the network interface before this determination. Claim 38 and 54 are rejected for the same reasoning.

Applicants have amended claim 32 to recite, in part, "identifying a processor of the first and second processors to process said second packet." Applicants respectfully submit that this recitation is not inconsistent with the earlier recitation in claim 32 of "processing, by the network interface, said packet according to the TCP connection."

Similarly, claim 38 has been amended to recite, in part, "The method of claim 33, wherein the host computer system comprises multiple processors for processing network packets in accordance with the TCP protocol."

Claim 54 has been canceled.

3. Claim 32

Regarding claim 32, the Office Action also states:

> Claim 32 recites, "A method of transferring a packet received at a network interface to a host computer system". The amended limitation recites, "if the host computer system contains a plurality of processors such that a first of the processors is on the network interface". The preamble differentiates the network interface and the host computer system as two separate elements. Therefore it is unclear how one of the host computer system's processors can be on the network interface.

Applicants have amended claim 32 to recite, in part, a method of transferring a packet received at a network interface "of" a host computer system, instead of reciting a method of transferring a packet received at a network interface "to" a host computer system. That is, the network interface is part of the host computer system, rather than differentiated as two separate elements.

B. 35 USC § 103

Claims 1-12, 14 -17, 20-29, 31, 42-44, 46-53 and 55-56 stand rejected under 35 U.S.C. 103(a), as allegedly being unpatentable over U.S. Patent No. 6,172,980 to Flanders et al. ("Flanders").

1. Claims 1, 24 and 53

Regarding claims 1, 24 and 53, the Office Action states:

> Regarding claims 1, 24, 53, Flanders disclosed a method of transferring a packet to a computer system, wherein the packet is received at a communication device from a network (Flanders, col. 1, lines 39-41, a network router receiving and routing packets), comprising:
> parsing a header portion of a first packet received at a communication device to determine if said first packet conforms to a pre-selected protocol (Flanders, col. 3, lines 60-65, "RHP (Receive Header

Processor) determines the protocol being used for the received data unit"; See also col. 6, lines 50-51);

generating a flow key to identify a first communication flow that includes said first packet wherein said flow key includes a TCP connection for the communication flow (Flanders, col. 6, line 50 through col. 7, line 5, port information extracted from the received frame in order to classify packet according to flow ID, the information extracted from the packet used as a flow key to look the packet up, including IP protocol types, including TCP);

routing the packets to their destination (Flanders, col. 1, lines 50-55, Flanders disclosed the router making forwarding decisions to route the packet, see also Abstract, "identifying a data unit to be routed by a router)

associating an operation code with said first packet, wherein said operation code indicates a status of said first packet, including whether said packet is to be transferred to the hose computer system for processing in accordance with said pre=selected protocol (Flanders, col. 4, lines 22-35, 50-63 Flanders disclosed the RHP determining whether the packet is to be routed or bridged and performing protocol processing on the packet when it is to be routed based on bytes).

Flanders further disclosed forwarding the packets for receipt by a downstream network device (Flanders, col. 9, lines 40-43).

Flanders did not explicitly state transferring processing, by the network interface, said packet according to the TCP connection.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that since the router of Flanders clearly routes the packet to a network device, that the network device must perform the proper protocol processing on the packet in order to properly interpret the information from that packet. For example, using the very well known TCP/IP protocol, in order for two computers to successfully communicate via TCP/IP (Flanders, Fig. 6), both computers must protocol process the TCP/IP packets, which are clearly routed through the Internet, via routers such as the one described by Flanders.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to interpret the routing of a packet to its destination to include that destination performing the proper protocol processing in order to obtain the predictable result of the destination device being able to successfully interpret that packet at the receiving end, thereby resulting in successful communication.

Claim 24 includes a method with limitations that are substantially similar to the limitations of claim 1, and is therefore rejected under the same rationale. Claim 53 recites a computer readable storage medium storing instructions that perform the method of claim 1. Therefore claims 24, 53 are rejected under the same rationale.

Applicants have amended claim 1 to recite, in part, "processing, by the network interface, said packet according to the TCP connection, including updating a control

block representing the TCP connection on the network interface." Applicants respectfully assert that Flanders does not teach or suggest this limitation.

Applicants note that the Office Action appears to substitute a "communication device" in place of a "network interface" in the "parsing" step of claim 1. Specifically, the Office Action alleges that Flanders discloses "parsing a header portion of a first packet received at a communication device to determine if said first packet conforms to a pre-selected protocol," instead of the claimed "parsing a header portion of a first packet received at a network interface for the host computer." Partly because of this, however, it is unclear exactly what the Office Action is calling a "network interface" and a "host computer" in that "parsing" step.

Applicants have clarified, in the amendment to claim 1, that the "network interface (is) for the host computer system." Thus, applicants assume that the "network interface" of claim 1 is mapped to the "network interface module 14" of Flanders, and the "host computer system" is mapped to the "motherboard 12" of Flanders. The above interpretation, however, contradicts the Office Action assertion that "the router of Flanders clearly routes the packet to a network device," and "the network device must perform the proper protocol processing on the packet," because these latter assertions seem to indicate that the network interface is downstream of the router. Stated differently, the Office Action appears to allege that Flanders teaches a network interface that is both a router and a network device that the router routes packets to.

Applicants further note that claim 1 at least does not include the limitation alleged by the Office Action of "routing the packets to their destination (Flanders, col. 1, lines 50-55, Flanders disclosed the router making forwarding decisions to route the packet, see also Abstract, "identifying a data unit to be routed by a router)." In fact, because claim 1 has been amended to recite that the "network interface (is) for the host computer system," and "processing, by the network interface, said packet according to the TCP connection, including updating a TCP control block stored on the network interface," the assertion in the Office Action that Flanders discloses "routing the packets to their destination" shows that Flanders teaches away from amended claim 1. That is, a network interface for a computer system would not have been expected to route a packet to other networks when

that network interface processes the packet according to the TCP connection, including updating a control block representing the TCP connection on the network interface.

Claims 24 and 53 have been amended in a similar fashion to claim 1, and applicants respectfully assert that they are nonobvious over Flanders for the reasons mentioned above for claim 1.

2. Independent Claims 13, 42, 44 and 47

Independent claims 13, 42, 44 and 47 have been amended in a similar fashion to claim 1.

For instance, claim 13 has been amended to recite, in part "processing, by the network interface, said packet according to the TCP connection, including updating a control block representing the TCP connection on the network interface."

Similarly, claim 42 has been amended to recite, in part "a processor, disposed in the network interface, that maintains a TCP connection for the communication flow, the TCP connection stored as a control block on the network interface."

Likewise, claim 44 has been amended to recite, in part "a processor for processing said first packet and for maintaining a TCP connection for the communication flow, the TCP connection stored as a control block on the network interface."

Further, claim 47 has been amended to recite, in part "wherein said device maintains a TCP connection for the communication flow, the TCP connection stored as a control block on the device."

Applicants respectfully assert that claims 13, 42, 44 and 47 are nonobvious over Flanders for the reasons mentioned above for claim 1.

3. Dependent Claims 2-12, 14-17, 20-23, 25-29, 31, 43, 45-46, 48-52 and 54-57

Dependent claims 2-12, 14-17, 20-23, 25-29, 31, 43, 45-46, 48-52 and 54-57 depend from independent claims 1, 13, 24, 42, 44, 47 and 53, and are nonobvious at least for the reasons given above for those independent claims..

4.   Claim 18

Claim 18 stands rejected under 35 U.S.C. 103(a), as allegedly being unpatentable over Flanders in view of U.S. Patent No. 5,991,265 to Lincoln.

In this regard, the Office Action states:

> Regarding claim 18, Flanders disclosed the limitations as described in claim 1, including processing of the header at a Receive Header Processor (Flanders, col. 1, lines 50-60).
> Flanders did not explicitly state storing the data portion in a re-assembly storage area and one or more headers in a header storage area.
> In an analogous art of packet processing, Lincoln disclosed packet processing in which the system transfers the cell payloads to a reassembly memory while processing the headers from control memory and then combining the header and payload before transferring the cell (Lincoln, col. 5, lines 30-40). As such, Lincoln provides evidence that it is well known to divide packets between header and payload in order to perform header processing of the packets.
> Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the splitting of packet header and payload as performed in the teachings of Lincoln in order to provide the system of Flanders in order to reduce the amount of data to be analyzed by the RHP in order to process the headers in a more efficient manner.

Applicants note that claim 18 depends from claim 1, which as discussed above has been amended to be nonobvious over Flanders. Splitting of headers and data by Lincoln does not provide disclosure that, in combination with Flanders, renders obvious the limitations of either claim 1 or claim 18.

5.   Claims 32, 45 and 54

Claims 32, 45 and 54 stand rejected under 35 U.S.C. 103(a), as allegedly being unpatentable over Flanders in view of U.S. Patent No. 5,590,328 to Seno et al. ("Seno").

Regarding claim 32, the Office Action states:

> Regarding claim 32, Flanders disclosed a method of transferring a packet received at a network interface to a host computer system, comprising:
> receiving a packet from a network, storing said packet in a packet memory and
> parsing a header portion of said packet; extracting a value stored in said header portion; identifying a communication flow comprising said packet, wherein said flow includes a TCP connection and a first MAC

layer address (Flanders, col. 3, lines 60-65, "RHP (Receive Header Processor) determines the protocol being used for the received data unit"; See also col. 6, lines 50-51 ; col. 6, line 50 through col. 7, line 5, and col 7, lines 15-20, port information extracted from the received frame in order to classify packet according to flow ID, the information extracted from the packet used as a flow key to look the packet up);

determining whether a header in said header portion conforms to a pre-selected protocol (Flanders, col. 3, lines 60-65, "RHP (Receive Header Processor) determines the protocol being used for the received data unit");

determining whether a second packet in said packet memory is part of said communication flow (Flanders, col. 1, lines 39-40, Flanders disclosed performing the same for multiple received data units); and

processing, by the network interface, said packet the according to the TCP connection (Flanders, col. 9, lines 40-43);

if the host computer system contains a plurality of processors such that a first processor of the processors is on the network interface and a second of the processors is on the host computer, identifying a processor of the first and second processors to process said packet (Flanders, col. 4, lines 22-35, 50-63 Flanders disclosed the RHP determining whether the packet is to be routed or bridged and performing protocol processing on the packet when it is to be routed based on bytes, therefore determining whether the interface processes the packet or if it is sent to the end device for processing).

Flanders further disclosed forwarding the packets for receipt by a downstream network device (Flanders, col. 9, lines 40-43)

Flanders did not explicitly state the step of storing said packet in a host memory area in the downstream network device.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that since the router of Flanders clearly routes the packet to a network device, that the network device must perform the proper protocol processing on the packet in order to properly interpret the information from that packet, thereby requiring storing of the packet. For example, using the very well known TCP/IP protocol, in order for two computers to successfully communicate via TCP/IP (Flanders, Fig. 6), both computers must protocol process the TCP/IP packets, which are clearly routed through the Internet, via routers such as the one described by Flanders.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to interpret the routing of a packet to its destination to include that destination actually storing the packet in order to perform the proper protocol processing in order to obtain the predictable result of the destination device being able to successfully interpret that packet at the receiving end, thereby resulting in successful communication.

Applicants have amended claim 32 to recite, in part, "processing, by the network interface, said packet according to the TCP connection, including updating a control block representing the TCP connection on the network interface." Applicants respectfully assert that Flanders in view of Seno does not teach or suggest this recitation.

Applicants note that the Office Action does not provide any mention of why one of ordinary skill in the art would have looked to any disclosure of Seno for arriving at the limitations of claim 32. Thus, applicants submit that claim 32 is nonobvious for the reasons mentioned above with regard to the nonobviousness of claim 1 over Flanders. For instance, one of ordinary skill in the art would not have reasonably believed that a network interface for a computer system would route a packet to other networks when that network interface processes the packet according to the TCP connection, including updating a control block representing the TCP connection on the network interface.

Regarding claim 45, the Office Action states:

> Regarding claim 45, Flanders disclosed the limitations as described in claim 42.
> Flanders also did not explicitly state wherein, comprising: a load distributor for identifying a first processor within the host computer system for processing said first packet and said second packet; wherein said load distributor identifies a second processor in the host computer system for processing a packet from a different communication flow.
> In an analogous art, Seno disclosed a protocol parallel processing device in which the device determines which processor, among which of multiple processors, to process the packet according to the communication (Seno, col. 2, lines 35-65).
> One of ordinary skill in the art would have been motivated to combine the teachings of Flanders and Seno since both teachings involve protocol processing of packets, and as such, both are within the same environment.
> Therefore it would have been obvious to one of ordinary skill in the art to incorporate the "multiple processors" teaching as disclosed by Seno into the teachings of Flanders in order to distribute communications across multiple processors, thereby improving efficiency of routing data through the router as the load is distributed among multiple processors, while also increasing throughput (Seno, col. 2, lines 15-35).

As noted above, applicants have amended claim 42 so that it is nonobvious over Flanders. Claim 45 depends from claim 42. Applicants respectfully assert that Seno does not teach or suggest, alone or in combination with Flanders, the recitation in

amended claim 42 of "a processor, disposed in the network interface, that maintains a TCP connection for the communication flow, the TCP connection stored as a control block on the network interface." Thus Flanders in view of Seno does not render claim 45 obvious.

Claim 54 has been canceled.

III. Conclusion

Applicants have responded to each of the items in the Office Action and believe that the claims are in condition for allowance. Should the Examiner have any questions about this reply or application he is respectfully requested to telephone the undersigned.

Respectfully submitted,

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